upon the discovery of this remarkable plant. It is said that "when he first realized the extraordinary character of the plant he had found, his sensations were so overwhelming that he could do nothing but kneel down on the burning soil and gaze at it, half in fear lest a touch should prove it a figment of the imagination."

It is estimated that he reached London with more than 5000 species of plants. The bibliography of the collection shows 28 titles under the name of Welwitsch, and 61 titles under other names. At his death Dr. Welwitsch directed that the study set of his plants should be offered to the British Museum for purchase. The Portuguese government, however, claimed all of the collections, and demanded their delivery. This was resisted by Mr. Carruthers, then in charge of the botanical collections of the Museum, and Mr. Justen, of the firm of Dulau & Co. A suit in chancery was the result, and after long delays a compromise was reached in 1875, by which the Portuguese government was declared entitled to the collection upon condition that they should give to the British Museum the best set, next after the study set, which was returned to Lisbon. Mr. W. P. Hiern was engaged to sort and separate the specimens, and this afterwards led to his being engaged to prepare a catalogue of this remarkable collection for publication. At this late day, therefore, the first part of this catalogue has appeared.[2] It contains a preface by Mr. George Murray, explaining the ownership of the collection and the conditions of publication; a sketch of the life and labors of Dr. Welwitsch; and an account of the dicotyledons through Rhizophoraceæ. It is the intention to complete the dicotyledons in Part II, and to include the remaining groups in a third and concluding part.

It is useless to go into the details of a book containing such a mass of descriptions and notes. New genera and species abound, and the full notes give a very adequate notion of the relation of species, genera, and families to the vegetation as a whole. It is to be hoped that this exceedingly important publication will be carried to a speedy and successful conclusion. —J. M. C.

Physiological wall charts.

THE growing attention to instruction in plant physiology, even to elementary courses therein, is showing itself in the production of means for illustrating such courses. It is not long since the series of wall charts by Frank and Tschirch appeared. They served a useful purpose for small lecture rooms, but were altogether too small for rooms of any considerable size. Another series, composed of 15 plates, has just been published under the direc-

[2] HIERN, WILLIAM PHILIP.—Catalogue of the African plants collected by Dr. Friedrich Welwitsch in 1853–61. Dicotyledons, Part I. 8vo. pp. xxvi + 336. London: Printed by order of the Trustees [British Museum]. 1896.

tion of Dr. L. Errera, professor in the University of Brussels, and Dr. E. Laurent, professor in the State Agricultural Institute at Gembloux.[3]

These plates are of the same size as the well-known charts of Kny. The figures are not so numerous on each plate as to make them too small for ordinary lecture room, such as those seating 100–150, but for large halls they would be too small. To obviate this difficulty the publisher has arranged to furnish lantern slides in colors for those desiring them instead of the plates. The illustrations have been drawn from photographs of actual experiments, and particular pains have been taken to show the condition at the beginning as well as at the end of the experiment. The drawings are well executed and the plates are in every way commendable.

In the accompanying text the authors have given a generally satisfactory account of the phenomena illustrated upon the plates. Though brief, these explanations are usually comprehensive and clearly stated. The 100 pages of quarto text with their 86 half-tone reproductions of many of the figures on the plates form therefore almost a text-book of physiology. The subjects treated and the corresponding plates are as follows: I, the chemical composition of the plant and nutrition by the roots; II, respiration; III, nutrition by the leaves; IV, transpiration; V, saprophytic and parasitic plants and fermentation; VI, VII, carnivorous plants (Drosera, Dionæa, and Nepenthes), and fixation of nitrogen by Leguminosæ; VIII, IX, growth of roots, etiolation, growth of stems in length and thickness; X, geotropism; XI, heliotropism; XII, XIII, twining and climbing plants; XIV, the movements of leaves and flowers; XV, the variability of species as illustrated by the races of cabbage.

If all copies are printed on thin paper, as is that sent for notice, the plates would require mounting before they could be used safely as wall charts in the laboratory or class room. This, however, would not add very much to the cost, and the price at which the set is sold is certainly very easonable.— C. R. B.

Grasses of North America.

SUCH is the title of Professor Beal's work whose second volume has just appeared,[4] almost ten years after the first. This volume is noteworthy as it is the first attempt to bring together in a handy book all the grasses north

[3] ERRERA, L. et LAURENT, E.— Planches de physiologie végétale. Quinze planches murales en couleurs. 70×85^{cm}. Texte descriptif francais, et explication des planches en français, en allemand et en anglais. 4to. pp. 102. figs. 86. Bruxelles: Henri Lamertin, 20 rue du Marché au Bois. 1897. 50 francs.

[4] BEAL, W. J.— Grasses of North America. Vol II. The grasses classified, described, and each genus illustrated, with chapters on their geographical distribution and a bibliography. 8vo. pp. viii + 706. New York: Henry Holt & Co. 1896.